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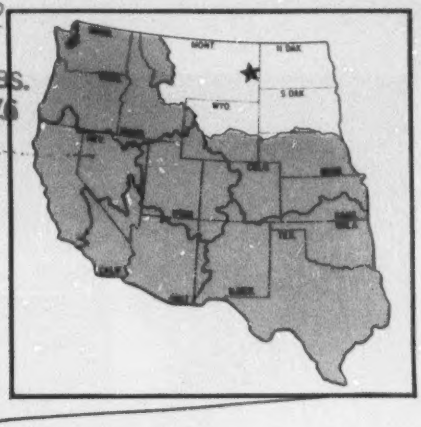
Buffalo Rapids Project

Montana: Custer, Dawson, and Prairie Counties

Upper Missouri Region
Bureau of Reclamation

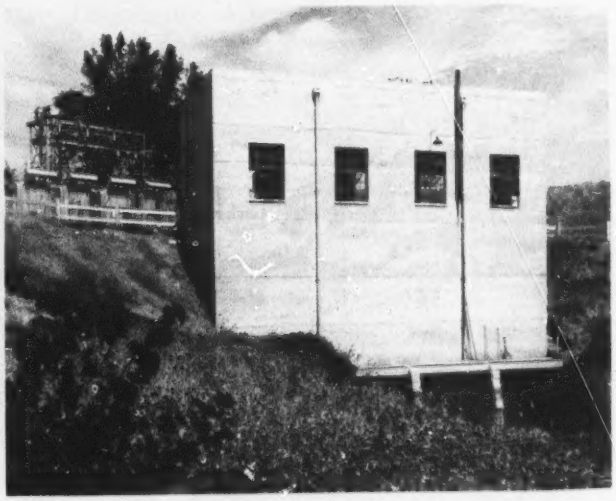


The Buffalo Rapids Project, in southeastern Montana, is divided into the First and Second Divisions. Principal structures include five pumping plants that pump water directly from the Yellowstone River and one relift pumping plant to provide irrigation water for 22,719 acres of land in the vicinity of Glendive, Fallon, and Terry, Mont.

PLAN

The First Division consists of the Glendive Unit and its extension. It serves 13,254 acres of irrigable land extending from Fallon to Glendive along the west bank of the Yellowstone River. No storage is provided as the water is pumped directly from the Yellowstone River to the Main Canal by motor-driven pumps.

The Second Division serves 9,465 acres of irrigable land along the south bank of the Yellowstone River between Miles City and Fallon, Mont. Three separate tracts of irrigable land are designated as the Shirley, Terry, and Fallon Units. Water is pumped directly from the Yellowstone River for each unit.



Glendive Pumping Plant

Pumping Plants

Glendive Pumping Plant Nos. 1 and 2 serve the First Division. Shirley, Terry, Fallon, and Fallon Relift Pumping Plants serve the Second Division. All the pumps are operated electrically with power supplied from the Pick-Sloan Missouri Basin Program.

Distribution System

Each unit has a separate canal and lateral system with appurtenant water control structures to provide for distribution of water to the land. A total of 62 miles of canals and 96 miles of laterals is included in the project.

DEVELOPMENT

Early History

Settlers along the Yellowstone River between Miles City and Glendive first attempted irrigation of two tracts of land, one by diversion and the other by pumping. The diversion scheme failed because a suitable diversion dam was not provided. The pumping unit, driven by a fuel-operated powerplant, proved to be too costly. The greater part of the area, therefore, reverted to dry farming, which encountered serious difficulties during the extended drought of the 1930's.

Investigations

In an effort to combat the depressed conditions, the local businessmen formed the Mid-Yellowstone Recovery Association in 1933 and obtained National Industrial Recovery Act funds for the Bureau of Reclamation to conduct an investigation. Based on the report of this investigation, the Glendive Unit was authorized to be constructed by the Bureau of Reclamation.

Region Revision 5/82
(From Project Data Book)

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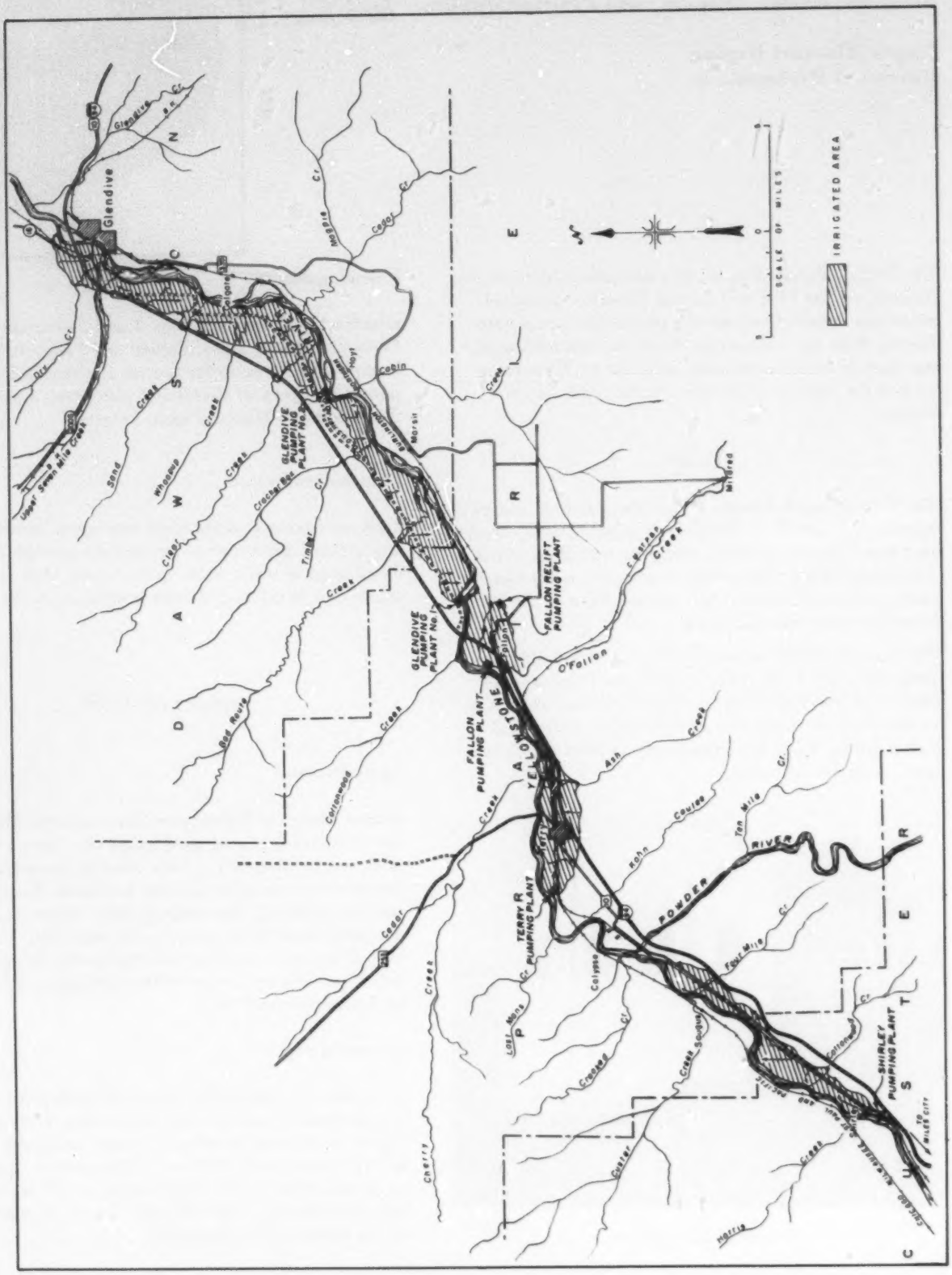

Buffalo Rapids Project

Authorization

The Glendive Unit was approved by the President on September 17, 1937, to irrigate an estimated 15,500 acres with funds provided under the Emergency Relief Appropriation Act of 1937. Glendive Extension was approved by the President on May 15, 1940, for 3,000 acres under the Water Conservation and Utilization Act of May 10, 1939 (53 Stat. 685). The Glendive Unit and Extension constitute the First Division.

The Shirley, Terry, and Fallon Units of the Second Division were approved by the President on October 11, 1939, as well as a revised plan on May 15, 1940, under the Water Conservation and Utilization Program.

Construction

Construction of the Glendive Unit, First Division, was initiated in 1937 by the Bureau of Reclamation. The Main Canal and portions of the laterals of this unit were completed in the spring of 1941. In 1942 and 1943, the Farm Security Administration completed the irrigation laterals and necessary concrete structures on the First Division. A third pumping unit at the Glendive Pumping Plant was installed by the Bureau of Reclamation in 1944 to increase the capacity of the pumping plant and furnish irrigation water for an additional 6,000 acres. Glendive Pumping Plant No. 2 for the First Division was completed in 1978. The plant was financed under the Small Reclamation Projects Act of 1956. The pumping plant supplies supplemental irrigation water to the Main Canal to meet peak demand situations.

The Second Division comprises the Shirley, Terry, and Fallon Units along the east bank of the Yellowstone River. Construction of the Second Division began in September 1940 and proceeded, with some delays, throughout World War II, although work on the Fallon Unit did not begin until August 1945. Construction of the Second Division was essentially completed in 1948.

Operating Agency

The project is operated by the Buffalo Rapids Board of Control as the agent of Buffalo Rapids Irrigation District No. 1 and Buffalo Rapids Irrigation District No. 2.

BENEFITS

Irrigation

Project soil is fertile and produces a large variety of crops when irrigated. Principal crops produced are alfalfa, sugar beets, beans, flax, potatoes, and wheat.

Shirley Pumping Plant

PROJECT DATA

Land Areas (1980)

Irrigable area:		
Full irrigation service	22,719	acres
Number of irrigated farms	221	

Area Irrigated and Crop Value

Year	Area irrigated, acres	Crop value, dollars
1968	21,360	2,578,855
1969	21,376	2,306,377
1970	21,091	2,529,791
1971	21,118	2,604,297
1972	21,139	3,436,471
1973	20,282	4,396,342
1974	20,161	6,267,960
1975	20,219	6,373,991
1976	20,344	4,486,898
1977	20,953	4,983,981
1978	20,865	5,323,298
1979	20,461	5,349,124
1980	20,522	7,330,965

Facilities in Operation

Canals	62	mi
Laterals	96	mi
Pumping plants	6	
Drains	45	mi

Climatic Conditions

Annual precipitation	13.9	in
Temperature:		
Maximum	117	°F
Minimum	−50	°F
Mean	44	°F
Growing season	145	days
Elevation of irrigable area	2150.0	ft

Settlement

Number of persons served with project water (1980):	
Farm irrigation service	754
Other water service[1]	609
Total	1,363

[1]Urban and suburban, residential, commercial, and industrial lands

ENGINEERING DATA

Water Supply

Yellowstone River

Drainage area at Miles City, Mont.	48,253	mi²
Annual discharge:		
Maximum (1943)	12,064,500	acre-ft
Minimum (1934)	4,445,700	acre-ft
Average	8,328,600	acre-ft

Carriage Facilities

Fallon Main Canal

Location: Near Fallon, Mont., from Fallon Pumping Plant east about 3 mi.
Construction period: 1946-48

Length	3	mi
Diversion capacity	72	ft³/s
Typical maximum section in earth:		
Bottom width	6	ft
Side slopes	1.5:1	
Water depth	3.7	ft

Fallon Relift Canal

Location: Near Fallon, Mont., from Fallon Relift Pumping Plant at the end of Fallon Main Canal, south-southwest about 3 mi.
Construction period: 1946-48

Length	3.5	mi
Diversion capacity	34	ft³/s
Typical maximum section in earth:		
Bottom width	4	ft
Side slope	1.5:1	
Water depth	2.7	ft

Glendive Canal

Location: From Glendive Pumping Plant near Fallon, Mont., northeast about 26 mi along the Yellowstone River to vicinity of Glendive, Mont.
Construction period: 1937-41

Length	34.1	mi
Diversion capacity	330	ft³/s
Typical maximum section in earth:		
Bottom width	13	ft
Side slopes	1.5:1	
Water depth	7	ft

Shirley Main Canal

Location: From Shirley Pumping Plant, about 20 mi southwest of Terry, Mont., northeast about 12 mi along Yellowstone River to a point 8 mi southwest of Terry.
Construction period: 1940-43

Length	13.3	mi
Diversion capacity	105	ft³/s
Typical maximum section in earth:		
Bottom width	8	ft
Side slope	1.5:1	
Water depth	4	ft

Terry Main Canal

Location: Vicinity of Terry, Mont., from Terry Pumping Plant east about 6 mi.
Construction period: 1940-44

Length	7.7	mi
Diversion capacity	60	ft³/s
Typical maximum section in earth:		
Bottom width	5	ft
Side slopes	1.5:1	
Water depth	3.5	ft

Pumping Plants

Designation	Number of units	Total capacity, ft³/s	Total dynamic head, ft	Total horsepower
First division:				
Glendive No. 1	3	330	103	4,500
Glendive No. 2	2	37.5	143	800
Second division:				
Shirley	3	111	51	750
Terry	3	61.5	109	900
Fallon	3	72	45	450
Fallon Relift	2	40	90	500

U.S. GOVERNMENT PRINTING OFFICE: 1982—579-615

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